

# Grindmaster® Barista Series Urns

## Operation and Instruction Manual for Barista Series Urns Models PB-8113, PB-8103E, PB-8303E

### Table of Contents

Description.....	3
Installation.....	4
How to Brew in an Automatic Urn .....	6
Urn Adjustments .....	6
Care & Cleaning .....	11
Service .....	12
Troubleshooting Guide .....	14
Wiring Diagrams .....	16

Prior authorization must be obtained from  
Grindmaster-Cecilware™ for all warranty claims.



**Model PB-8303E**

Grindmaster Barista Series Urns  
Models PB-8113E, PB-8103E, PB-8303

- All models are electrical heat only
- Single and twin are heat exchange units unless with suffix (P) which means it comes equipped with a pump
- Triples are pump style only.

Your model number is found on the nameplate under the controls.

**For the latest updates to our  
manuals please visit our website:  
[www.grindmaster.com](http://www.grindmaster.com)**

**Grindmaster-Cecilware Corporation**  
4003 Collins Lane • Louisville, KY 40245 USA  
Ph: 800.695.4500 or +1.502.425.4776  
Fax: +1.502.425.4664  
[www.grindmaster.com](http://www.grindmaster.com) • [info@grindmaster.com](mailto:info@grindmaster.com)



## Description

The Barista Series Urn is digitally controlled brewing system. This list of features will help you understand the controls available to you in your brewing process.

1. Each liner has three independent batch volumes.
  - Each batch volume is independent
  - Each batch can be programmed with pulse brewing feature
2. This urn displays coffee level inside each liner on the vertical LED graph located on the control panel under each liner. The LED graph reports the coffee level in 1/8th of total brewed volume.
3. Each liner has coffee-hold, countdown timer.
4. Spray arms are fitted with a sensor that allows the control to know the spray arm position.
5. The main display shows the time of day and if the UP arrow is pressed once, it displays the jacket temperature for 5 seconds and then reverts back to time of day.
6. The control system has an energy saving features that allow the urn to turn off the heat function during long periods of non-usage. Each week day can be individually programmed to have an ON time and an OFF time. i.e., if the coffee shop opens for business at 6 am, the urn can be programmed to heat up at 5 am so that it's ready to brew by 5:30 am. If the coffee shop closes at 7 pm the urn can be programmed to turn off the heat at 7 pm.
7. The urn has an automatic air agitation feature. Air agitation is used to keep the un-dissolved solids in the coffee in suspension. The operator can program the on and off time intervals.
8. The urn is equipped with an audio alarm. It will sound 2 beeps; 2 seconds on 2 seconds off, at the end of the brew cycle – notifying user that brewed coffee is ready to be served. And it will sound continuously for 5 minutes at the end of the coffee hold time. The main control is equipped with an ALARM OFF button.
9. The urn has Low Temp No Brew function. If enabled, the urn will not brew unless the water temperature is within 5°F of set point. If enabled and one tries to start a brew before reaching the minimum brew temperature the display will flash “**COLD**” for 3 seconds and the alarm will sound 3 beeps; 1 second on, 1 second off.
10. Program mode is password protected. The default password is: “**1208**”

## Installation

### **WARNING! ELECTRIC SHOCK HAZARD**

**INSTALLATION OF THIS URN SHOULD BE PERFORMED BY QUALIFIED SERVICE PERSONNEL ONLY. IMPROPER INSTALLATION COULD CAUSE ELECTRIC SHOCK.**

See rough in drawing for this model for dimensions and location of electrical and water input.

### Positioning

1. Position urn so that the faucets drip into a drip trough or drain receptacle of some type.
2. Level urn both front to back and left to right. The feet are adjustable for this purpose.

#### IMPORTANT:

THE PERSON INSTALLING THIS COFFEE URN IS RESPONSIBLE FOR ENSURING THAT THE ELECTRIC AND WATER CONNECTIONS MEET THE REQUIREMENTS OF THE NATIONAL ELECTRIC CODE, THE NATIONAL PLUMBING CODE, AND ANY LOCAL ORDINANCES.

DO NOT RUN TUBING, PIPES, CONDUIT OR CABLE UNDER CENTER PORTION OF BARISTA SERIES URNS. THIS AREA MUST BE KEPT CLEAR FOR SERVICING URN CONTROLS.

### Water

1. Cold or hot water (160 degrees F. maximum) may be used. Heat input capacity is ample for the coldest water, and cold water should be used for best brewing results.
2. Provide shut-off valve and union in supply line near urn.
3. Minimum operating pressure at urn should be 30 PSI.
4. Maximum pressure recommended at urn is 70 PSI.
5. Copper tubing should be used for flexibility.
6. To insure pressure at the urn of at least 30 PSI, use 3/8" OD tubing for short runs, 1/2" OD tubing for longer runs, and larger size tubing for unusually long runs. Be sure other appliances will not reduce water pressure excessively.
7. Turn on the water supply line and check for leaks.

NOTE: For the best tasting coffee, add a filtering system to the water supply line to eliminate any taste and/or odor from the water.

## Installation (cont.)

### Heat Input

#### Electric Heated Urns, Models with suffix (E):

1. Check rating marking on urn nameplate to be sure electric lines match voltage, phase, and amperage requirements of urn. Select the proper cord and cord grip for electrical rating of the urn. The cord must be an oil resistant type such as SO, SOO, STO, STOO, SEO, SJO, SJOO, SJTO, SJTOO, SJEO, HSO, HSOO, HSJO, or HSJOO. Alternatively, flexible metal conduit and type THHN wires may be used.
2. The terminal block and ground screw are located behind a cover plate on the front.
3. A neutral wire is normally required on all single phase and on 208 Volt, 3 phase power supplies to operate 120 VAC control circuit. In the case of single phase, 2 wire service (no neutral), or 3 phase 3 wire service (no neutral), a separate 120 VAC cord and plug (NEMA 5-15P) supplies 120 VAC power to the control circuit (or for use of transformer on heat exchange urns). This cord must be ordered separately.

### **WARNING! ELECTRIC SHOCK HAZARD**

**NEVER USE THE GROUND CONDUCTOR AS A NEUTRAL. THIS COULD CAUSE ELECTROCUTION.**

4. A fused disconnect switch should be installed near urn.
5. Urn body **MUST** be grounded. A grounding terminal is provided for this purpose.
6. Use only copper wire to connect this urn.

## Operation and Start-Up

1. Open water supply line valve to urn.
2. Turn on or plug in the power supply to the urn. Water compartment will begin to fill automatically. Do not power up the urn when the water line is off.
3. Pump urns have a fast fill feature. This applies to Triple urns and models with a suffix (P) To fill the urn in only ten minutes on these models:

The fast fill valve is located on the underneath, rear of the urn. There knurled knob that sticks out past the control drawer. Turn valve to the right to close. Turn valve to the left to open. During initial fill the valve should be open. Close valve after initial fill so that the valve will be closed during normal urn operation.

4. For heat exchange urns, just turn on the water. The urn will begin to fill and then heat. It will take approximately 45 minutes to heat water, depending on inlet water temperature, and urn heater wattage.
5. Brew and discard at least one batch of water into each liner. Check that the level is correct. See the adjustments section if changes are needed.

## How to Brew in an Automatic Urn

1. Place filter paper in brew basket with designated amount of coffee grounds. Coffee experts recommend from 6 to 10 ounces of coffee per gallon of water. Make certain you have a level bed of coffee.

Consult your coffee supplier for exact brewing specifications. Filter paper sizes are:

<u>Liner size</u>	<u>Filter size</u>	<u>Grindmaster Part #</u>
1.5 gallon	14 x 6	BB2.0WP
3 gallon	18 x 6	BB3WP

2. Replace cover. Lift and rotate the spray arm to position the nozzle in the hole on the basket cover.
3. Press the batch size desired on the liner that the spray arm is set to brew in.
  - The timer display for the batch will flash “S” or “M” or “L”; depending on which batch size button was pressed.
  - To stop the brew at any time, press any of the three batch buttons for that liner.
  - If the spray arm is not pointed to the same liner in which the batch button is pressed, the display will show “ARM”. You will need to move the spray arm to the correct position, or press the batch size on the liner that the spray arm is set to brew in.
  - If after pressing a batch size, the display momentarily shows “COLD”, it means the water is not hot enough to brew. Wait for a few minutes and try again. To check the water tank temperature press the **UP** arrow button once and the tank temperature will display for 5 seconds.
4. The brew cycle takes from 1 to 6 minutes depending on the batch size. When the brew is finished, allow one to four minutes for the coffee to drip from the basket. Drip time is dependent on the amount of coffee grounds used.
5. When the drip period is complete, center the spray arm and remove the basket to throw away the grounds. Replace the liner cover to keep the coffee hot.
6. Coffee is ready to serve.

## Urn Adjustments

The URN CONTROL has several factory-set options that can be modified by the operator. These are divided into two categories: **Universal Settings** and **Brew Settings**. Universal Settings pertain to the whole unit, and Brew Settings pertain to brew cycles for each individual liner.

### **Brew Settings:**

Left Liner (for each batch size: Small, Medium, Large)

- Brew time
- Number of pulses (0 to 6)
- Pulse Brew ON time
- Pulse Brew OFF time

Middle Liner (On Triple urns only) (For each batch size: Small, Medium, Large)

- Brew time
- Number of pulses (0 to 6)
- Pulse Brew ON time
- Pulse Brew OFF time

Right Liner (On twins and Triple urns only) (For each batch size: Small, Medium, Large)

- Brew time
- Number of pulses (0 to 6)
- Pulse Brew ON time
- Pulse Brew OFF time

The urn control has a battery back-up thus all settings are retained during a power loss. The original factory settings can be restored by using the **System Restore Function**.

## Urn Adjustments (cont.)

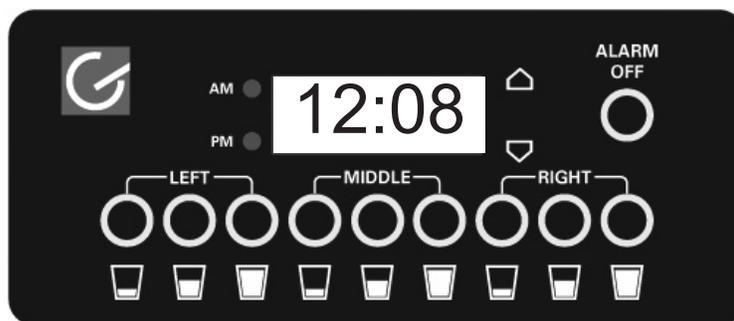
### Universal Settings:

Temperature Scale:	°F or °C
Water Temperature:	Set water jacket temperature, 205 °F maximum.
Clock Settings:	Set for 12 hours clock (AM and PM) or 24 hour clock
Energy Savings Settings:	Set ON and OFF time for each week day
Air agitation setting:	Set for automatic or manual air agitation
Low Temp no Brew:	Enable or disable low temp no brew function
Coffee hold time setting:	Enable or disable hold time and set hold time
Display brightness:	Set display brightness level
Audio loudness:	Set volume for audio alarm.

### Entering Program Mode:

To enter program mode press and hold the **UP** and **DOWN** button simultaneously for 15 seconds until the words “**PASS**” is shown on the display.

Now the password “**1208**” must be entered.



Press the Middle, Large portion button 8 times to display the 8 of 1208.

Press the Middle, Small portion button 2 times to display the 2 of 1208.

Press the Left, Large portion button 1 time to display the 1 of 1208.

No need to press anything for the 0 in 1208, since 0 is the default number.

Once “**1208**” appears on the display, press the alarm button once: The display will change to “**PRO**”.

If you need to enter the **UNIVERSAL SETTING** program Mode, press the **ALARM OFF** once more. The display will change to: “**°F**”

If you need to change a **BREW SETTING** program mode, press the portion button of the particular liner you want to change. The display will change to: “**br-t**”

NOTE: The triple urn display decal is shown above. On twin urns, the MIDDLE artwork is deleted from the decal but the buttons are still functional. On single urns, the LEFT and RIGHT artwork is deleted from the decal but the buttons are still functional for entering the password.

## Urn Adjustments (cont.)

### UNIVERSAL PROGRAM MODE

Universal Settings Menu Navigation: Advancing through the menu is done by pressing the **ALARM OFF** button. Each parameter is adjusted by pressing the **UP** or **DOWN** button. The table below shows how it steps through the menu.

Step	Setting	Display	Adjustments
1	<b>Temperature Scale</b> between °F or °C	Displays the current selection. Factory default is “° F”	“° F” or “° C”
2	<b>Water Temperature</b> set point in °F or °C	Displays the current selection. Factory default is “195” in °F or “91” in °C	“170” to “205” °F “77” to “96” °C
3	<b>Clock Format:</b> 12/24 HR	Displays the current selection. Factory default is “12H”	“12H” or “24H”
4	<b>Set Time</b>	Displays the current selection.	XX:XX
5	<b>Set Day of Week</b>	Displays the current selection.	“1” to “7”
6	<b>Show Display Mode</b>	“diSP”	None
7	<b>Set Display Mode</b>	Displays the current selection.	“d CL” or “d tP”
8	<b>Set Energy Saving Enable/Disable</b>	Displays the current selection. Factory default is “ESdS” Disabled	“ESEn” or “ESdS”
9	<b>Show Energy Saving Temperature</b> If Energy Saving Enabled	“EstP” Factory default is 70°F or 21°C	None
10	<b>Set Energy Saving Temperature</b> If Energy Saving Enabled	Displays the current selection. Factory default is “70” in °F or “21” in °C.	“70” to “205” °F “77” to “21” °C
11	<b>Show Day ON</b> If Energy Savings Enabled	X “on” : This defines day of the week, generally day 1 is Monday, Day 2 Tuesday, etc.	X = “1” to “7”
12	<b>Set On Time</b> If Energy Savings Enabled	Displays the current selection. (The time the urn starts to heat)	XX:XX
13	<b>Show Day OFF</b> If Energy Savings Enabled	X “oFF” (The time the urn will stop heating)	X = “1” to “7”
14	<b>Set OFF Time</b> If Energy Savings Enabled	Displays the current selection.	XX:XX
15	<b>Set Air Stir Enable/Disable</b>	Displays the current selection. Factory default is “A-En” Enabled	“A-En” or “A-dS”
16	<b>If Air Stir Enabled</b> <b>Show Air Stir On Time</b>	“A on” : How long air agitation should be on should be a proximately 20 – 30 sec.	None
17	<b>Set Air Stir On Time</b> Total amount of on time for the Air Stirrer.	Displays the current selection Factory default is 30	“1” to “255” in seconds
18	<b>If Air Stir Enabled</b> <b>Show Air Stir Off Time</b>	“Aoff”	None
19	<b>Set Air Stir Off Time</b> Total amount of off time for the Air Stirrer.	Displays the current selection Factory default is 180	“1” to “255” in seconds
21	<b>Show Low Temp No Brew</b>	“Ltn”	None
22	<b>Set Low Temp No Brew</b> enable or disable	Displays the current selection. Factory default is “OFF”	“OFF” or “On”
23	<b>Show Coffee Hold time Enable/Disable</b>	Displays the current selection. Factory default is “CHtE”	“CHtE” or “CHtd”
24	<b>Show Hold Time</b> If enabled total amount of time for holding the coffee brewed before Alarm	“Hd-t”	None
25	<b>Set Hold Time</b> If enabled total amount of time in minutes for holding the coffee brewed before Alarm	Displays the current selection Factory default is 35	“1” to “99” in minutes.
26	<b>Show Display Brightness</b>	“DiSP”	
27	<b>Set Display Brightness</b>	Displays the current selection. Factory default is “25”	“100” , “75” , “50” or “25”
26	<b>Show Audio Loudness</b>	“Au L”	
27	<b>Set Audio Loudness</b>	Displays the current selection. Factory default is “100”	“100” , “75” , “50” or “25”
28	<b>DONE</b>	“donE”	press a Brew Key to program or the ALARM Key to exit programming mode

## Urn Adjustments (cont.)

### BREW SETTING PROGRAM MODE

#### Brew Settings – Brew Cycle Selection

There are 3 brew cycles per liner for a total of nine independent settings.

The **BREW SETTING** program mode adjusts settings for the brew cycle selected by the keypad. For instance, if you want to change settings for **MIDDLE LARGE BREW**, enter program mode as explained in Entering Program Mode section. After entering the password and pressing the **ALARM OFF** button the display will show “**PRO**”, then press the **MIDDLE LARGE BREW** button to change the parameters for that portion. Then follow the steps shown on the table below.

After setting the brew settings for that portion, the display will show “**DONE**”. If you want to program another batch size go ahead and press that batch button and repeat the program steps on the table below. If you are done programming and “**DONE**” is showing on the display, press the **ALARM OFF** button once and you will exit program mode.

Advancing through the menu is done by pressing the selected **BATCH SIZE** button. Each parameter is adjusted by pressing the **UP** and **DOWN** buttons.

Step	Setting	Display	Adjustments
1	<b>Show Brew Time</b> Total amount of spray time for the brew cycle.	“br-t”	None
2	<b>Set Brew Time</b> Total amount of spray time for the brew cycle.	Displays the current selection	“0:01” to “6:00” in minutes. seconds
3	<b>Show Pulse Brew</b>	“P-b”	None
4	<b>Pulse Brew Number</b> sets the number of pulses in the brew cycle	Displays the current selection	“OFF” to “6”
5	<b>Show Pulse Brew Pour On Time</b> If Pulse Brew Number not OFF	“P on”	None
6	<b>Pulse Brew Pour On Time</b> sets the amount of ON time in each pulse	Displays the current selection	“5” to “60” in seconds
7	<b>Show Pulse Brew Pour Off Time</b> If Pulse Brew Number not OFF	“PoFF”	None
8	<b>Pulse Brew Off Time</b> sets the amount of delay time between each pulse	Displays the current selection	“5” to “60” in seconds
10	<b>DONE</b>	“donE”	<b>press another Batch button to program or the ALARM OFF button to exit programming mode</b>

## Urn Adjustments (cont.)

### To calibrate the level sensors:

The urn level sensors are factory calibrated to three gallons on the liner. Which means each LED on the bar graph represents approximately 0.375 or 3/8 of a gallon or 48 ounces. This calibration is set for all liners. If the medium batch size is 1.5 gallons, this will show on the display, after the brew, as (4) LED's illuminated.

The control system allows the operator to calibrate the level sensors to their "large" batch size. Example: if the operator chooses to brew (spray over) 2 gallons as a "large" batch volume, the urn sensors will need to be recalibrated.

To have accuracy on the level sensors a simple calculation must be made. The parameters are that; the spray volume is 2 gallons (256 ounces); and the coffee grounds portion is 14 ounces. This means that the finished brew will be approximately 242 ounces or 1.89 gallons. (Approximately one liquid ounce of water will be absorbed (retained) in the grounds for each ounce of coffee grounds used.

To calibrate the sensors using the above parameters:

1. Allow the urn to fill and heat.
2. Empty all liners.
3. Draw 8 ounces of hot water from hot water faucet and pour into one liner.
4. Repeat step (3) for each liner.
5. Press and hold, simultaneously, the **ALARM OFF** and the **DOWN** arrow button for 5 seconds. The main display will show "**C Dn**".
6. Empty all liners.
7. Drawing hot water from hot water faucet, fill each liner with the full finished volume, in this case 242 ounces.
8. Press and hold, simultaneously, the **ALARM OFF** and the **UP** arrow button for 5 seconds. The main display will show "**F Dn**".
9. Calibration is complete.
10. If the urn is unplugged, the control will remember these settings.
11. The only time the urn will need to be recalibrated is if the sensor or main boards are replaced. Or if the operator chooses another "large" brew volume.

## System Restore Function

The factory original programmed settings may be reset by the following procedure.

1. Press and hold, for 5 seconds, the LEFT SMALL BREW and RIGHT LARGE BREW buttons.
2. The 4 digit display will show "**PASS**". See Entering Program mode instructions on page 7.
3. When the proper password is shown press the **ALARM OFF** button Key.
4. The main display will show "**rStr**".
5. Then press and hold for 5 seconds the LEFT LARGE BREW key.
6. The main display will display "**done**" when completed.
7. Press **ALARM OFF** button to exit.
8. The System Restore Function will exit automatically after 4 minutes of idle time.

## Care and Cleaning of Coffee Urns

### **WARNING! BURN HAZARD**

**THE URN SURFACES AND WATER INSIDE JACKET ARE VERY HOT. USE CAUTION WHEN CLEANING THIS URN TO PREVENT BURNS!**

**IMPORTANT: NEVER USE CHLORINE BASED CLEANERS SUCH AS BLEACH TO CLEAN STAINLESS STEEL. DO NOT USE SCOURING CLEANERS ON THE URN'S SURFACES.**

#### **After Each Brew**

1. Discard grounds and rinse brew basket.

#### **Every Day**

1. Clean liners by rinsing and scrubbing with large, plastic bristle brush.
2. Wipe outside surfaces of the urn with a damp cloth.
3. Clean the brew basket. Remove wire basket insert if needed.
4. Wipe clean the liner covers.
5. Fill the liners with about one gallon of water to prevent coffee oil burn-in.

#### **Weekly or Bi-Weekly Depending on Use**

1. Fill the urn liners with about one gallon of hot water.
2. Pour into the liner the recommended concentration of urn cleaner. Excessive amounts of cleaner will attack the stainless steel.

Urn cleaners which have been used successfully:

DIP-IT manufactured by Economics Laboratories, Inc.  
4 Corporate Park Drive, White Plains, NY 10604

OXYLITE manufactured by Avril, Inc., Syndet Division  
601 N. Third Street, Reading, PA 19601

3. Scrub the liner interior with a large plastic bristle brush.
4. Rinse and drain the liner.
5. With the liners empty, remove the coffee faucets by unscrewing the large plastic wing-nuts which fasten the faucets. Scrub from the opening into the center of the urn with a long brush.

### **WARNING! BURN HAZARD**

**DO NOT REMOVE HOT WATER FAUCET FOR CLEANING. HOT WATER WILL EMPTY FROM JACKET, CAUSING BURNS!**

6. Unscrew the top of the faucet from its body. Scrub faucet body. Clean the silicone seat cup with a soft cloth and soapy water.
7. Reassemble faucets. Fill the liners with hot water and drain until the liner and all parts are completely rinsed.

## Service

### **WARNING! BURN HAZARD**

**TO PREVENT ELECTRIC SHOCK AND BURN HAZARD ALL TASKS DESCRIBED IN THIS SECTION ARE TO BE PERFORMED BY A TRAINED AND QUALIFIED SERVICE TECHNICIAN.**

The rest of this manual contains information to aid the service technician who is maintaining this equipment.

This section has information on performing common service tasks.

Controls, options, and heater wiring diagrams are provided. To find the correct diagram you must know: Number of heaters and what electric ratings (see nameplate for electric ratings).

#### **To Access Controls:**

All controls are located on drawer under the urn. To access these controls:

1. Shut off power to the urn.
2. Remove screws on front of the control drawer.
3. Drop panel by lowering front and pulling forward. If diagnosis must be made with power on and drawer dropped, be sure no live parts contact body of urn.

#### **To Move the Urn:**

The urn must be completely drained (jacket and liners) and allowed to cool prior to moving this urn.

#### **To Drain the Tank (Jacket):**

### **WARNING! BURN HAZARD**

**THIS URN IS FILLED WITH SCALDING HOT WATER. ALWAYS COMPLETELY DRAIN THE JACKET AND LINERS AND ALLOW TO COOL BEFORE ATTEMPTING TO MOVE THIS URN. FAILURE TO DRAIN AND COOL COULD RESULT IN SEVERE BURNS.**

**Note: Read all instructions before draining.**

1. Disconnect electric power to the urn.
2. The urn body contains one water tank. It will contain one, two, or three coffee liners, depending on model, that may contain hot liquids.
3. Connect a drain hose with hose fitting to drain valve located under the urn. Make sure the drain hose is capable of withstanding 210°F (100°C) water.
4. Place other end of drain hose in proper drain receptacle such as a sink or trough.
5. Open drain valve. Be careful, hot water will pour from urn.
6. Drain each liner by opening the faucet in front of the urn for each liner.
7. Close the drain valve after the urn is drained. Note: To perform the tasks listed below, the urn must be totally drained and cool.

## Service (cont.)

**NOTE: To perform the tasks listed below, the urn must be totally drained and cool.**

### To Remove a Liner:

1. Unscrew the liner nut at the bottom of the liner. A tool to do this may be purchased from Grindmaster-Cecilware Corporation.
2. With a rubber mallet, tap the side of the liner near the bottom until the liner is loose. Find and remove the rubber washer which seals the bottom of the liner.

### To Replace a Liner:

1. Place a liner washer over the inlet to the coffee tube. You must use a new washer whenever the liner is removed.
2. Place the liner in the urn, lining the hole in the bottom of the liner to the coffee tube.
3. With a rubber mallet, tap the top perimeter of the liner ring to seat the liner on the coffee tube. Tap down evenly along the circumference of the liner ring.
4. Tighten the liner nut at the bottom of the liner.

### To Replace a Heater (drain the urn first):

1. Remove the control drawer as described above. (Refer to page 12)
2. Locate the heater terminals under the urn.
3. Remove the heater liner which is closest to the terminals.
4. Loosen the heater connection and remove heater. Clean area around holes to make sure you will get a good seal with new heater.
5. Place the copper sealing washer on the new heater with the split toward the element.
6. Position the new heater in the urn and tighten the nut.
7. Be sure the electrical connections are tight. Close the female terminal gap with pliers if it is too loose.

*Replace the wires if they are damaged.*

### To Convert Between Single and Three Phase (on urns with three heaters only, 208-240V only):

Refer to the heater wiring diagram #091-227 at the end of the manual.  
Use extra caution in ensuring that all wires are correctly and securely connected.

### To Replace a Spray Over Pump on Pump Urns:

1. Disconnect power from urn.
2. Remove the cover over the controls.
3. Locate the brass hose clamp in the control panel. (Usually located in plastic bag with wiring diagrams.)
4. Clamp off intake hose to pump from water jacket. (Hose leading to center of pump.)
5. Disconnect wires from pump to control (label wires.)
6. Disconnect ground wire.
7. Slip hoses off pump. Some residual water may exit from hose (2 to 3 ounces.)
8. Loosen screws which hold pump in place and remove pump.
9. Retain fittings and mounting bracket for use with replacement pump.
10. Replace pump, be sure it is level. Reconnect wiring, including ground and tubing. Make sure orientation of pump outlet is same as original pump.
11. Restore power to the urn and test.

## Troubleshooting: Filling, Heating, and Brewing

Problem	Possible Cause	Service Check	Remedy
<b>Filling Problems</b>			
<b>Over filling water tank even when the power is OFF.</b>	<ul style="list-style-type: none"> <li>• Fill valve not sealing properly</li> <li>• Fill valve installed backwards</li> </ul>	<ul style="list-style-type: none"> <li>• Water entering tank continuously, usually slow.</li> <li>• Look for direction of arrow on valve body.</li> </ul>	<ul style="list-style-type: none"> <li>• Disassemble valve and clean out dirt. Valve may need new plunger if seal is worn.</li> <li>• If arrow on valve is pointing toward water inlet, remove valve and install correctly.</li> </ul>
<b>Over filling water tank only when power is on.</b>	<ul style="list-style-type: none"> <li>• High electrode coated in lime or faulty.</li> </ul>		<ul style="list-style-type: none"> <li>• Remove electrode assembly and clean both probes. If this does not work, replace assembly.</li> </ul>
<b>Tank does not refill.</b>	<ul style="list-style-type: none"> <li>• No power at equipment.</li> <li>• No water at equipment.</li> <li>• Water strainer clogged.</li> <li>• Electrodes faulty.</li> <li>• Fill valve faulty.</li> </ul>	<ul style="list-style-type: none"> <li>• Nothing operates.</li> <li>• Cracked water inlet fitting.</li> <li>• Water pressure before strainer but not after.</li> <li>• Tank fills only when probe wire is disconnected.</li> <li>• 120V is across terminals, but no fill.</li> </ul>	<ul style="list-style-type: none"> <li>• Check main switch or circuit breaker, urn's circuit breaker or power switch if provided.</li> <li>• Make sure all water supply line valves are open.</li> <li>• Remove and clean or replace strainer's mesh.</li> <li>• Replace electrodes. If no remedy, check for improper wiring or level probe tip touching metal.</li> <li>• Disassemble valve and clean or replace plunger if frozen. If plunger is OK, coil may need replacement.</li> </ul>
<b>Heating Problems</b>			
<b>Tank does not heat.</b>	<ul style="list-style-type: none"> <li>• Low electrode faulty or covered with lime.</li> <li>• Heater contactor coil faulty. (electric heat)</li> <li>• Heater contactor contacts faulty.</li> <li>• Heater faulty.</li> </ul>	<ul style="list-style-type: none"> <li>• Check for 120V across contactor coil.</li> <li>• Check for heater voltage between each heater pole on contactor and a different terminal pole.</li> <li>• Check resistance across elements with wires disconnected.</li> </ul>	<ul style="list-style-type: none"> <li>• Clean electrode, check wiring. If no remedy, replace electrodes.</li> <li>• If correct voltage, but contactor not closing, replace contactor.</li> <li>• If no continuity across contactor when it is closed, replace contactor.</li> <li>• If resistance is much different than 10 to 15 ohms, replace heater.</li> </ul>
<b>Recovery time is very long.</b>	<ul style="list-style-type: none"> <li>• Heater faulty.</li> </ul>	<ul style="list-style-type: none"> <li>• See above.</li> </ul>	<ul style="list-style-type: none"> <li>• See above.</li> </ul>
<b>Brewing Problems</b>			
<b>Brew volume too large or small.</b>	<ul style="list-style-type: none"> <li>• Timer out of adjustment.</li> <li>• Flow rate is incorrect.</li> <li>• Pressure not adequate at urn.</li> <li>• Lime build-up in heat exchange coil. (heat exchange models only)</li> </ul>	<ul style="list-style-type: none"> <li>• Brew batch for one minute and measure volume. Compare to factory setting chart.</li> <li>• Water line must be 3/8" ID and pressure at least 30 PSI.</li> <li>• Brew rate regulator opened completely, pressure OK at urn, but flow is still slow.</li> </ul>	<ul style="list-style-type: none"> <li>• Adjust timer.</li> <li>• Adjust flow rate. If flow rate cannot be adjusted, check for lime in spray arm, or spray arm post. Water regulator on heat exchange urns may be faulty or need adjustment.</li> <li>• Increase water line size. Plumb line so other equipment does not interfere with pressure.</li> <li>• De-lime heat exchange coil.</li> </ul>
<b>Brew volume erratic. (There are always some small variations from batch to batch).</b>	<ul style="list-style-type: none"> <li>• Pump cavitation (pump models only)</li> <li>• Pressure fluctuations at urn.</li> </ul>	<ul style="list-style-type: none"> <li>• Water temperature above 200° F.</li> <li>• Check pressure at urn inlet.</li> </ul>	<ul style="list-style-type: none"> <li>• Lower temperature setting</li> <li>• Plumb water line so its pressure is not influenced by other appliances. On Heat Exchange Urns, adjust, repair, or replace regulators.</li> </ul>

## Troubleshooting: Filling, Heating, and Brewing (cont.)

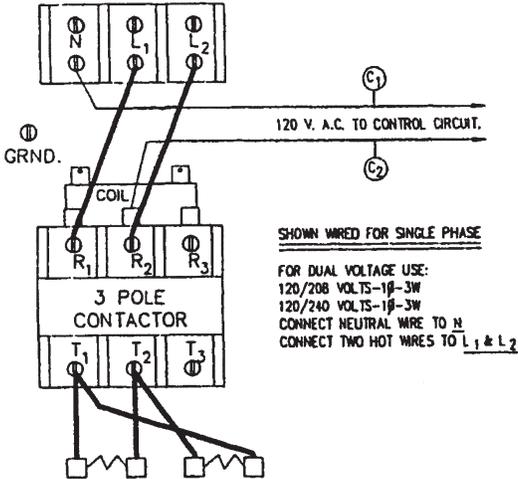
Problem	Possible Cause	Service Check	Remedy
<b>Brewing Problems (cont.)</b>			
<b>Brew will not start.</b>	<ul style="list-style-type: none"> <li>• Pump faulty (pump urns only)</li> <li>• Spray arm clogged with lime.</li> <li>• Coil on Heat Exchange Urns clogged.</li> </ul>	<ul style="list-style-type: none"> <li>• 120V between electrical input at pump, but pump does not operate.</li> <li>• Cannot blow through spray arm.</li> <li>• Brew valve opens but no water enters coil.</li> </ul>	<ul style="list-style-type: none"> <li>• Check for lime in pump impeller. Clean or replace impeller. If no remedy, replace pump.</li> <li>• Clean lime out of spray nozzle.</li> <li>• Delime or replace coil.</li> </ul>
<b>Agitation does not automatically start after brew.</b>	<ul style="list-style-type: none"> <li>• Air pump faulty.</li> </ul>	<ul style="list-style-type: none"> <li>• Pressing manual agitation button does not start air pump. Also check for 120V at electrical input to pump.</li> </ul>	<ul style="list-style-type: none"> <li>• Replace air pump.</li> </ul>
<b>Agitation pump starts, but does not stir coffee.</b>	<ul style="list-style-type: none"> <li>• Silicone tube at top from pump to bottom fitting broken.</li> </ul>	<ul style="list-style-type: none"> <li>• Visual.</li> </ul>	<ul style="list-style-type: none"> <li>• Replace tubing.</li> </ul>

If you still need help, call our Service Department at (800) 695-4500 (USA or Canada) (Monday through Friday, 8 am - 6 pm EST), +1-502-425-4776 or an authorized service center in your area. Please have the model and serial numbers ready so that accurate information may be given. Prior authorization must be obtained from Grindmaster-Cecilware Corporation's Technical Services Department for all warranty claims.

# Wiring Diagram for 208V-240V 2 or 3 Heating Element Wiring (All Urns)

## SINGLE PHASE ONLY

CONNECT POWER HERE

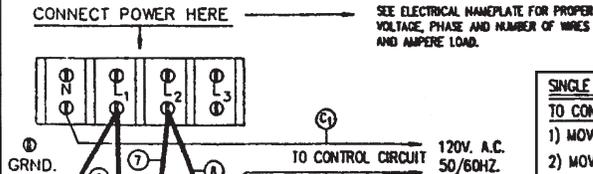


SHOWN WIRED FOR SINGLE PHASE

FOR DUAL VOLTAGE USE:  
 120/208 VOLTS-1Ø-3W  
 120/240 VOLTS-1Ø-3W  
 CONNECT NEUTRAL WIRE TO N  
 CONNECT TWO HOT WIRES TO L<sub>1</sub> & L<sub>2</sub>

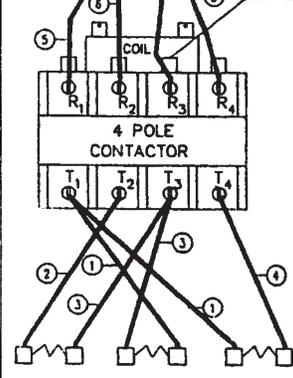
2 HEATING ELEMENTS - SINGLE PHASE ONLY  
 DO NOT WIRE 2 ELEMENTS 3 PHASE  
 NOTE: A 2 POLE CONTACTOR MAY BE USED ON MODELS  
 HAVING A LOW WATTAGE HEATER

ELECTRIC SERVICE	STANDARD PARTS
120/208/3Ø/4 WIRE 120/208/1Ø/3 WIRE 120/240/1Ø/3 WIRE	REQUIRES CIRCUIT BREAKER FOR CONTROL CIRCUIT PROTECTION. NEUTRAL TERMINAL BLOCK PROVIDED.
208/1Ø/2 WIRE 240/1Ø/2 WIRE 240/3Ø/3 WIRE 208/3Ø/3 WIRE	NO NEUTRAL TERMINAL BLOCK SUPPLIED. NON PUMP TYPE URNS INCLUDE STEPDOWN TRANSFORMER OR SEPARATE 120V CORD FOR CONTROL CIRCUIT. PUMP TYPE AND REMOTE DISPENSING URNS HAVE SEPARATE 120V CORD FOR CONTROL CIRCUIT.

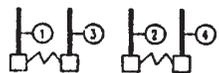


SEE ELECTRICAL NAMEPLATE FOR PROPER VOLTAGE, PHASE AND NUMBER OF WIRES AND AMPERE LOAD.

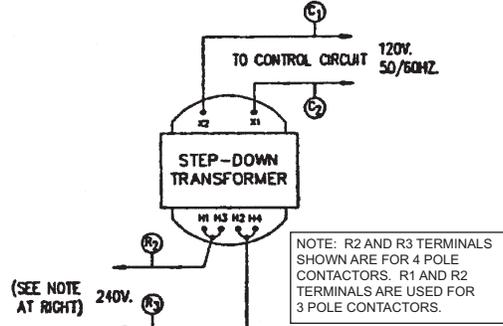
**SINGLE PHASE WIRING SHOWN TO CONVERT TO THREE PHASE Δ**  
 1) MOVE WIRE ⑤ FROM L<sub>1</sub> TO L<sub>3</sub>.  
 2) MOVE WIRE ④ FROM T<sub>4</sub> TO T<sub>2</sub>.



3 HEATING ELEMENTS



2 HEATING ELEMENTS - SINGLE PHASE ONLY  
 DO NOT WIRE 2 ELEMENTS 3 PHASE

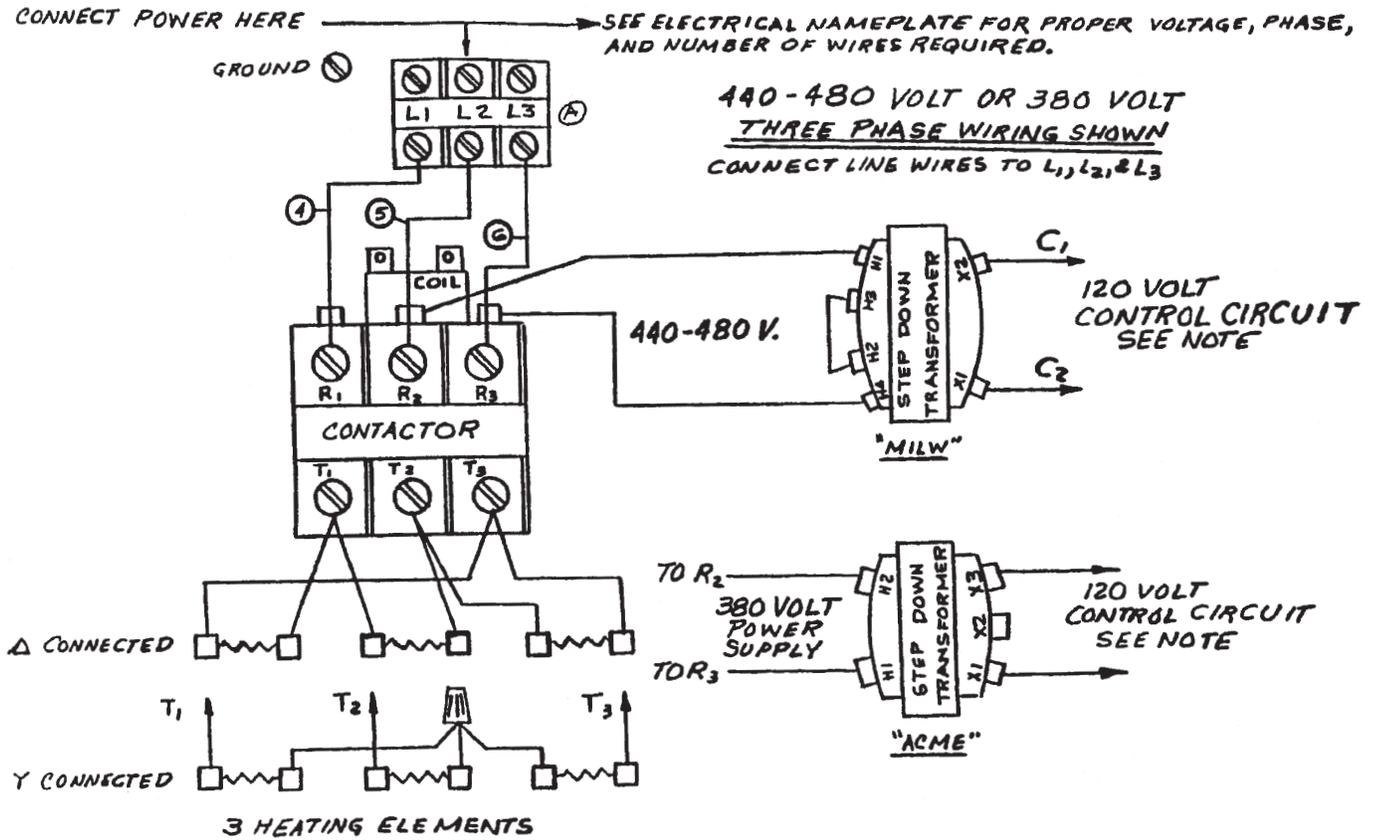


(SEE NOTE AT RIGHT)

NOTE: R2 AND R3 TERMINALS SHOWN ARE FOR 4 POLE CONTACTORS. R1 AND R2 TERMINALS ARE USED FOR 3 POLE CONTACTORS.

NEUTRAL TERMINAL BLOCK NOT SUPPLIED WITH TRANSFORMER

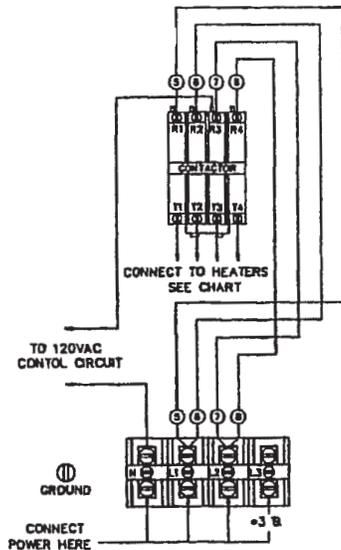
# Wiring Diagram for 380V-480V 3PH, 3 Element Wiring (All Urns)



NOTE: PUMP URNS AND REMOTE DISPENSING URNS HAVE A SEPARATE CORD AND PLUG FOR CONTROL CIRCUIT.

Drawing #091-027

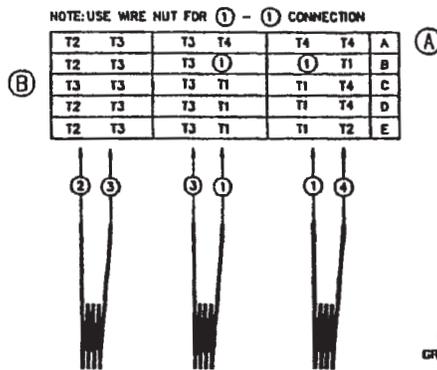
# Wiring Diagram for 208V-240V Alternate Low Water Heater



120/208V - 1 PH - 3 WIRE  
 120/240V - 1 PH - 3 WIRE  
 120/208V - 3 PH - 4 WIRE  
 (WITH NEUTRAL WIRE)

**• FOR 3 PHASE WIRING**

1. MOVE WIRE (6) FROM L1 TO L3
2. CONNECT HEATER ACCORDING TO FIG. E ON CHART
3. FIG. E FOR 3 PH ONLY



**240V HEATERS**

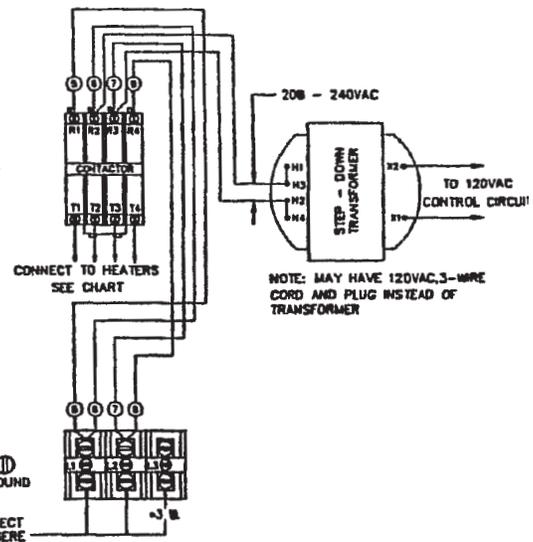
EACH HTR. SIZE	208V SERVICE									
	A		B		C		D		E •	
	KW	AMPS	KW	AMPS	KW	AMPS	KW	AMPS	KW	AMPS
3.8 KW	2.5	13	4.0	19	5.5	25	8.0	38	8.0	22
4.0 KW	3.0	14	4.5	22	6.0	28	8.0	43	8.0	25
5.0 KW	4.0	19	5.5	27	7.5	36	11.5	54	11.5	31
5.7 KW	4.5	21	6.5	31	8.5	41	13	62	13	36
6.8 KW	5.0	24	7.5	36	10.0	48	15.0	72	15.0	42

EACH HTR. SIZE	240V SERVICE									
	A		B		C		D		E •	
	KW	AMPS	KW	AMPS	KW	AMPS	KW	AMPS	KW	AMPS
3.5 KW	3.5	15	5.0	22	7.0	29	10.5	44	10.5	25
4.0 KW	4.0	17	6.0	25	8.0	33	12.0	50	12.0	29
5.0 KW	5.0	21	7.5	31	10.0	42	15.0	63	15.0	36

• 3 PH. - ONLY

WRES (5) (6) (7) (8) ARE 8 AWG, 105°C  
 (1) (2) (3) (4) ARE 10 AWG, 105°C



NOTE: MAY HAVE 120VAC, 3-WIRE CORD AND PLUG INSTEAD OF TRANSFORMER

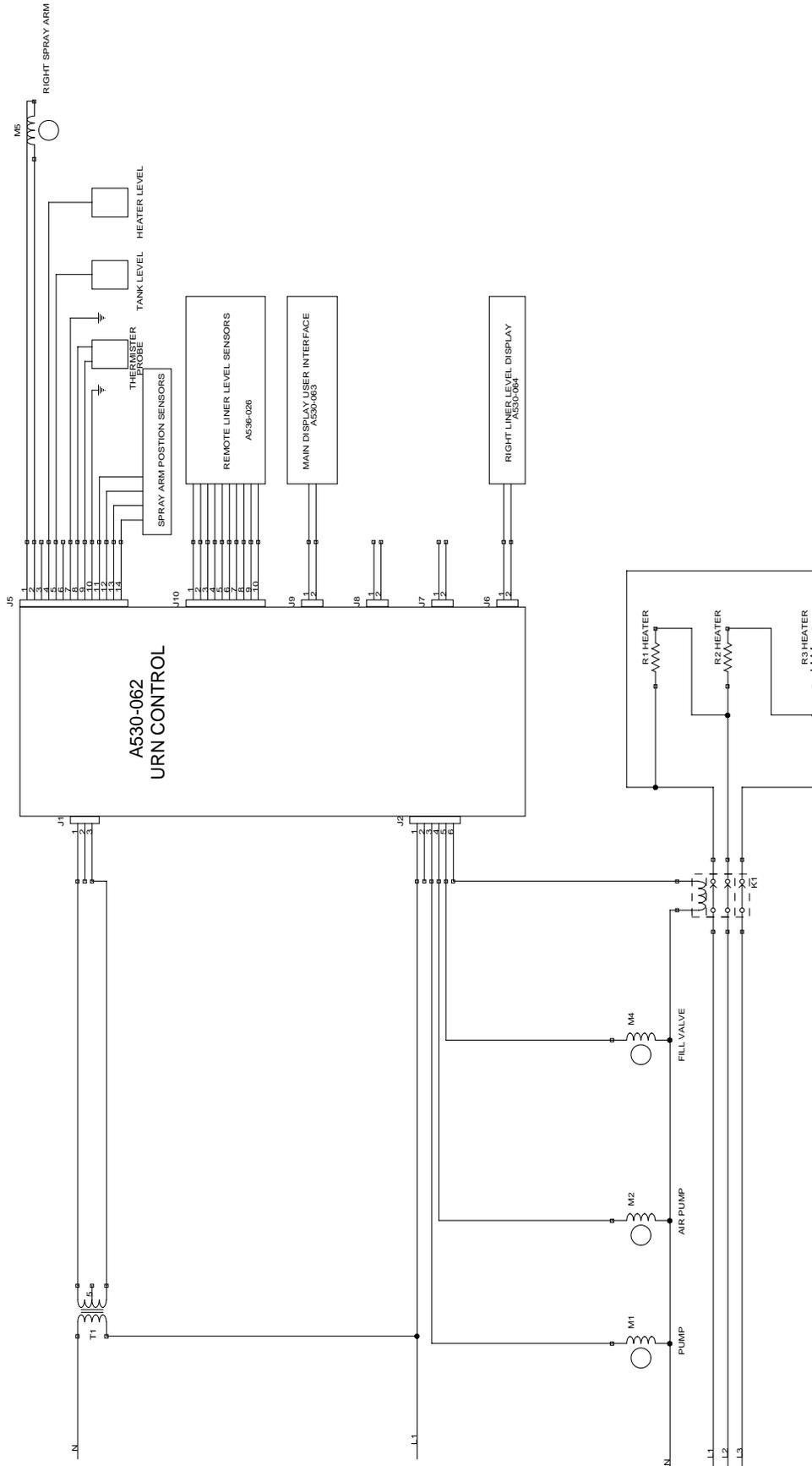
- (C) 208V OR 240V - 1 PH - 2 WIRE  
 208V OR 240V - 3 PH - 3 WIRE

**• FOR 3 PHASE WIRING**

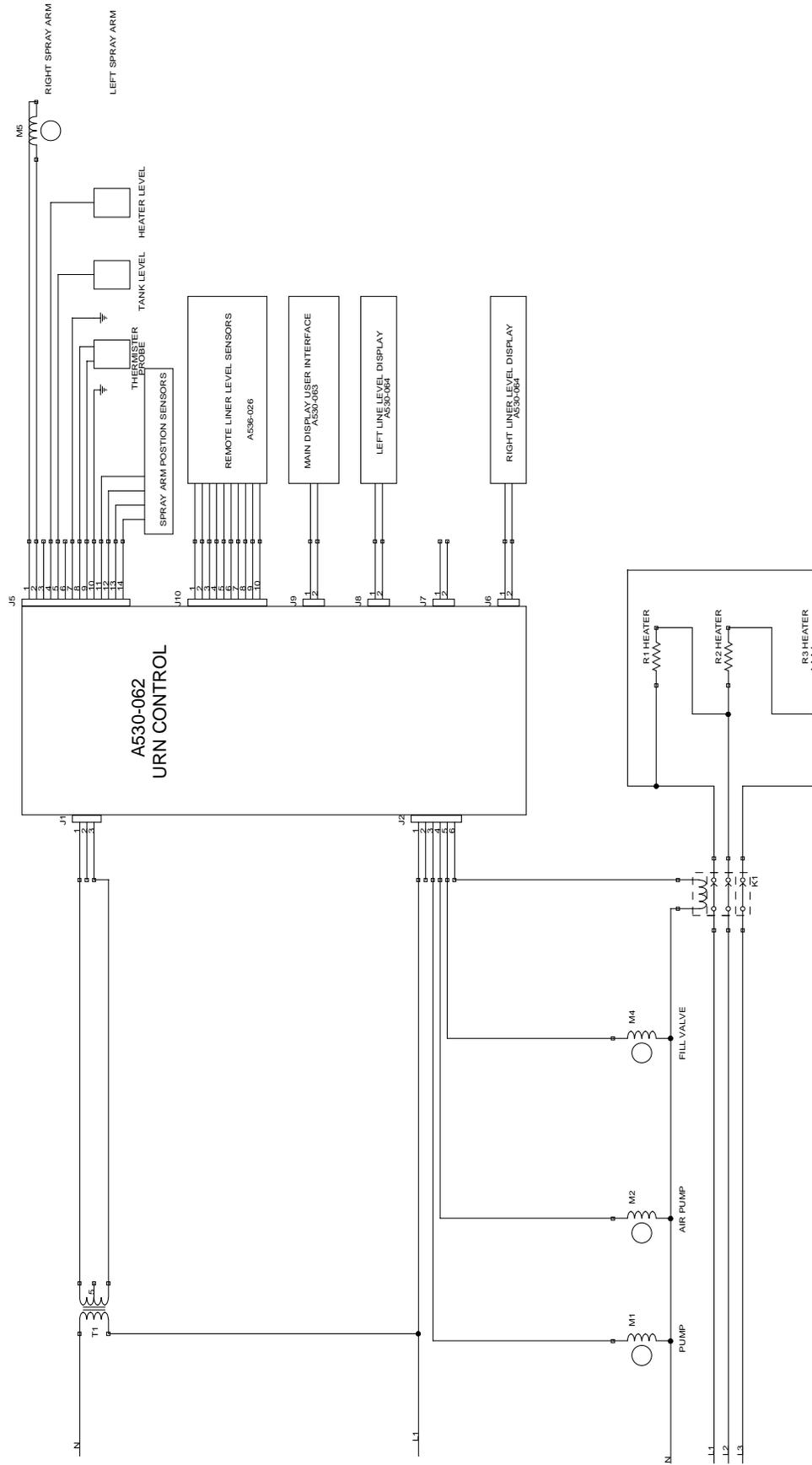
1. MOVE WIRE (6) FROM L1 TO L3
2. CONNECT HEATER ACCORDING TO FIG. E ON CHART
3. FIG. E FOR 3 PH ONLY

Drawing #091-024

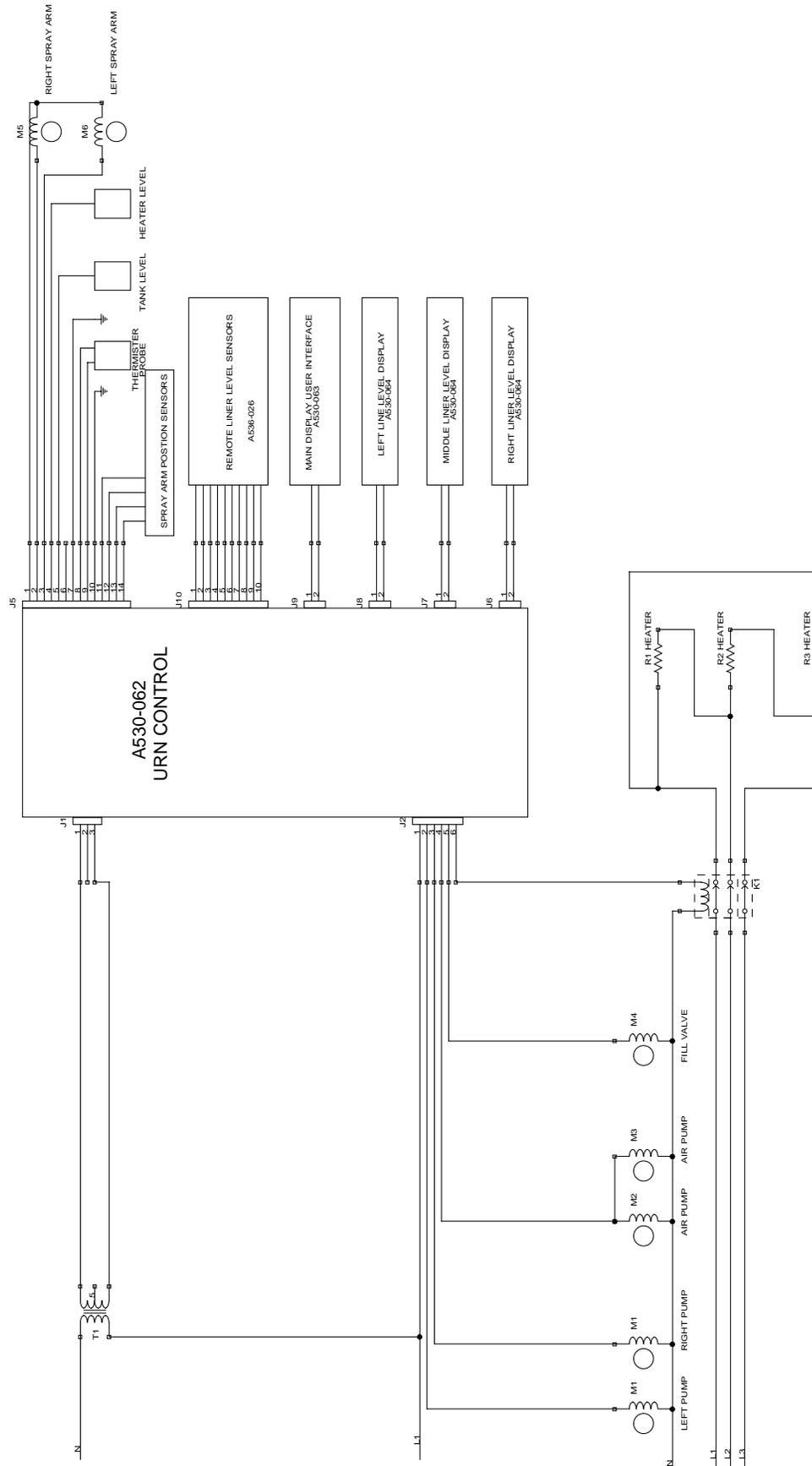
# Wiring Diagram for PB-8113E Single Urn



# Wiring Diagram for PB-8103E Twin Urn



# Wiring Diagram for PB-8303E Triple Urn









---

Tel (502) 425-4776 • Fax (502) 425-4664 • 1-800-695-4500 (USA & Canada only)  
P.O. Box 35020 • Louisville, KY 40232 • USA  
[www.grindmaster.com](http://www.grindmaster.com) • email: [info@grindmaster.com](mailto:info@grindmaster.com)